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Rocky Flats Environmental Technology Site

4-I63-ENV-OPS-FO.45

REVISION 1

CHEMICAL HANDLING AND MIXING OPERATIONS CONSOLIDATED WATER TREATMENT FACILITY

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RMRS Vice President Environmental Restoration | Print Name | Date

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CONCURRENCE BY THE FOLLOWING DISCIPLINES WILL BE DOCUMENTED IN THE PROCEDURE HISTORY FILE

Data Management and Reporting Services
Environmental Operations Management
Industrial Hygiene
Occupational Safety
Quality Assurance
Radiological Health and Engineering
Waste Management

USE CATEGORY 3

ORC review not required

The following have been incorporated in this revision
N/A

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2

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Change Number
1-21	/ /	

TOTAL NUMBER OF PAGES 21

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1 PURPOSE

This procedure describes the administrative and operational steps used at Rocky Flats Environmental Technology Site (RFETS) for process chemical handling for the Consolidated Water Treatment Facility (CWTF) treatment system equipment contained in Trailers T-900A and 900B

2 SCOPE

This procedure applies to all Environmental Restoration Program Division (ERPD) Operations and subcontractor personnel

This procedure addresses the following topics

- Automatic filling of Cleaning Chemical Tank TK-9 or Cleaning Flush Tank TK-10 with water
- Manual filling of TK-9 and TK-10 with water
- Chemical cleaning solution make-up in TK-9
- Filling and adding chemicals to Ferric Sulfate Tank TK-4
- Filling and adding chemicals to Sulfuric Acid Tank TK-5
- Filling and adding chemicals to Lime Slurry Tank TK-6
- Filling and adding chemicals to Dilute Sulfuric Acid Tank T-21
- Filling Sodium Hydroxide Tank T-22

3 OVERVIEW

This procedure implements the requirements for safe chemical handling for the chemical precipitation/microfiltration (CP/MF) treatment equipment at CWTF

This procedure was established to ensure that chemical handling operations for the preparation of process chemicals for the CP/MF treatment system are accomplished in a uniform and safe manner This procedure is used by the operator(s) during all chemical handling operations of the CP/MF treatment system

4 LIMITATIONS AND PRECAUTIONS

- Wherever chemicals are stored and dispensed, extreme care shall be taken

- Operators shall be trained in the safe handling of all reagents and shall know what particular precautions should be taken regarding the microfiltration system

- The HASP is the governing safety document and shall be followed by all ERPD Operations Support and subcontractor personnel

  Water shall always be added first before adding chemicals to the Cleaning Chemical Tank TK-9 acid tanks TK-5 and T-21, Lime Slurry Tank TK-6 and Ferric Sulfate Tank TK-4

- Operators will be aware that Material Safety Data Sheets are on file for all chemicals used at the CWTF and should be reviewed as necessary prior to handling

- When filling a tank the filling operator shall not leave the vicinity of the tank and shall ensure that the tank is not overfilled by visually monitoring tank level

4 LIMITATIONS AND PRECAUTIONS (continued)

- Tank fill valves (manual valves--MV) shall be opened and closed carefully Placing automatic valves (AV) in HAND results in immediate opening of the valve

- Operators will be aware that not all tanks have level detection with alarms or interconnects that will stop the operation of a pump Operators will monitor the pump and delivery system for water or chemical during pumping operations Operators will note indicating lamps for proper function, listen for unusual noises and observe pressure gauges for abnormal readings

5 PREREQUISITE ACTIONS

5 1 CWTF Responsible Manager

[1] Ensure that mixing and handling chemicals is on the Plan of the Day (POD)

[2] Ensure that the treatment plant operators involved in the implementation of this procedure have appropriate training as detailed in the 1-10000-TUM, Training User's Manual and that the training is documented in accordance with 2-F94-ER-ADM-02 01 Training

[3] Ensure that the Lead Operator is certified as Class A, Industrial Wastewater Treatment Plant Operator, and that all other Operators are certified at a minimum Class C, Industrial Wastewater Treatment Plant Operator (in accordance with Article 9 of Title 25, C R S 1973)

5 2 Lead Operator /Operator

[1] Operates and monitors the CP/MF system equipment

[2] Reports abnormal conditions, occurrences, and incidents to Lead Operator

[3] Ensures that visitors comply with the Rocky Flats Environmental Technology Site CWTF Health and Safety Plan (HASP)

[4] Completes the required entries in logs including CWTF Logbook and CWTF Chemical Logbook, and applicable forms

5 3 Health and Safety Specialist

[1] Conducts daily health and safety briefing prior to commencement of operations

6 INSTRUCTIONS

6 1 Automatic Tank Fill for TK-9 and TK-10 (with water)

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

NOTE 2 *Placing the control switch for a valve or pump in AUTO will illuminate the control switch and cause the valve or pump to operate only when control logic dictates*

Operator

[1] Don the appropriate Personal Protective Equipment (PPE) as required in the HASP

NOTE 3 *Placing the TANK FILL SELECT switch to OFF will stop the tank fill cycle manually*

[2] Select TK-9 or TK-10 to be filled by positioning the TANK FILL SELECT switch (Switch is located on the T-900A control panel)

[3] **IF** filling TK-10 is required
THEN

[A] Verify that AV-914 and AV-917 control switches are in AUTO

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in AUTO

[C] Press the TANK FILL START pushbutton to initiate the fill cycle

[D] Ensure that the following automatic actions occur
- AV-914 and AV-917 OPEN
- AV-914 and AV-917 CLOSE when high level is reached in TK-10

(Automatic valves have indicators which show OPEN and CLOSE positions)

[E] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF after filling TK-10

[F] Place Tank Selector switch to OFF

[4] **IF** filling TK-9 is required
THEN

[A] Verify that AV-914 and AV-915 control switches are in AUTO

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in AUTO

[C] Press the TANK FILL START pushbutton to initiate the fill cycle

6 1 Automatic Tank Fill for TK-9 and TK-10 with water (continued)

Operator (continued)

[D] Ensure that the following automatic actions occur

-AV-914 and AV-915 OPEN
-AV-914 and AV-915 CLOSE when high level is reached in TK-9
(Automatic valves have indicators which show OPEN and CLOSE positions)

[E] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF after filling TK-9

[F] Place Tank Selector switch to OFF

[5] Record all activities in the CWTF Operations Log Book

6 2 Manual Tank Fill for TK-9 and TK-10 (with water)

CAUTION
Manual filling of the cleaning system tanks bypasses automatic level controls

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

NOTE 2 *Placing the control switch for a valve or pump in AUTO will illuminate the control switch and cause the valve or pump to operate only when control logic dictates*

Operator

[1] Don the appropriate Personal Protective Equipment (PPE) as required in the HASP

[2] IF manual filling of Cleaning Flush Tank TK-10 is required,
THEN

[A] Place the AV-914 and AV-917 control switches in HAND

[B] OPEN valve MV-999

[C] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[D] Visually monitor the level increase in TK-10

[E] WHEN the desired water level in TK-10 is obtained,
THEN place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

[F] Place the AV-914 and AV-917 control switches in OFF

[G] CLOSE valve MV-999

6 2 Manual Tank Fill for TK-9 and TK-10 with water (continued)

Operator (continued)

[3] **IF** manual filling of Cleaning Chemical Tank TK-9 is required,
THEN

[A] Place the AV-914 and AV-915 control switches in HAND
[B] OPEN valve MV-999

[C] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[D] Visuallv monitor the level increase in TK-9

[E] **WHEN** the desired water level in TK-9 is obtained,
THEN place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

[F] Place the AV-914 and AV-915 control switches in OFF

[G] CLOSE valve MV-999

[4] Record all activities in the CWTF Operations Log Book

6 3 Chemical Cleaning Solution Make-up in Cleaning Chemical Tank TK-9

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

NOTE 2 *Placing the control switch for a valve or pump in AUTO will illuminate the control switch and cause the valve or pump to operate only when control logic dictates*

Operator

[1] Don the appropriate Personal Protective Equipment (PPE) as required in the HASP

[2] Ensure that all of the following pump control switches are in OFF
- CLEANING PUMP CP-1
- FILTRATE TRANSFER PUMP TP-11-1
- SEAL FLUSH WATER PUMP TP-11-2
- SLUDGE PUMP SP-1
- INFLUENT FEED PUMP FP-1

NOTE 3 *When a bleach solution is used five 55 gal drums of 10% sodium hypochlorite are added to an empty TK-9*

NOTE 4 *When a hydrogen peroxide solution is prepared 5 to 15 gal of 35% hydrogen peroxide is added to approximately 250 gallons of water just before the cleaning cycle in accordance with 4-I60-ENV-OPS-FO 42*

NOTE 5 *When a dilute Hydrochloric acid solution is used five 55 gal drums of 5 to 10% hydrochloric acid are added to an empty TK-9*

6 3 Chemical Cleaning Solution Make-up in Cleaning Chemical Tank TK-9 (continued)

The concentrations of cleaning chemicals may vary depending on the degree of cleaning required (or achieved) and the amount of cleaning chemical(s) mixed to obtain the desired cleaning solution Alternate chemical solutions may be required but review by operations personnel (based on process knowledge and experience) manufacturer s recommendations (chemical effects on equipment) and approval by Health and Safety/Industrial Hygiene (for personnel safety) must be obtained prior to use

Operator (continued)

[3] Add the required amount of clean water to Chemical Cleaning Tank TK-9 for the chemical solution that is to be prepared in accordance with Section 6 1, Automatic Tank Fill or 6 2, Manual Tank Fill

[4] **IF** TK-9 contains too much water for preparing the desired chemical mixture,
THEN pump the excess water to Concentration Tank TK-8 (via TK-1 and TK-2) as follows

NOTE 6 *pH values should be evaluated prior to the next process run of the Chemical Precipitation/Microfiltration system*

[A] Verify that enough capacity exists in TK-8 to receive the excess water

[B] OPEN the following valves
- MV-968
- AV-911 (Place HOA switch to HAND)
- AV-912 (Place HOA switch to HAND)

[C] Place the SEAL FLUSH WATER PUMP TP-11-2 control switch in AUTO

[D] Place the CLEANING PUMP CP-1 control switch in HAND

[E] **WHEN** the desired level in TK-9 is reached, OR the TK-9 high-level alarm is no longer annunciating,
THEN place the CP-1 control switch in OFF

[F] Place the SEAL FLUSH WATER PUMP TP-11-2 control switch in OFF

[G] CLOSE the following valves
- MV-968
- AV-911 (Place HOA switch to OFF)
- AV-912 (Place HOA switch to OFF)

[5] **IF** TK-9 contains too much bleach solution for preparing the desired chemical mixture
THEN refer to 4-I60-ENV-OPS-FO 42

[6] Fill a 5-gal plastic container with flushing water for rinsing the drum pump as follows

[A] OPEN the following valves
-MV-999
-MV-938

6 3 Chemical Cleaning Solution Make-up in Cleaning Chemical Tank TK-9 (continued)

Operator (continued)

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[C] OPEN MV-962 (water spigot) and the fill container with approximately three gallons of water

[D] **WHEN** the container is full
THEN

-Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

-CLOSE the following valves
-MV-962
-MV-999
-MV-938

[7] Transfer the appropriate amount of dilute hydrochloric acid or bleach as required from drum to TK-9 by using the electric drum pump with a 1-inch polyethylene (poly) discharge hose long enough to extend from drum to TK-9 tank opening

[A] Place the electric drum pump in the opening at the top of drum

[B] Verify that the drum pump control switch is in OFF

[C] Attach the 1-inch poly hose to the discharge of the drum pump

[D] Run the poly hose from the drum pump into the TK-9 tank opening

[E] Plug the drum pump power cord into a 120V receptacle

[F] Place the drum pump control switch in ON and pump the contents from the drum into TK-9

[G] **WHEN** the drum is empty
OR the required volume has been pumped
THEN place the drum pump control switch in OFF

[8] Rinse the drum pump stem and flush the drum pump and hose into TK-9 after transferring chemical to TK-9 as follows

[A] Place drum pump into the 5-gal rinse water container which was filled in Step [6]

[B] Run the poly hose from the drum pump into the TK-9 tank opening

[C] Place the drum pump control switch in ON and pump the rinse water from the 5-gal container into TK-9

[D] **WHEN** the 5-gal container is empty
THEN place the control switch for the drum pump in OFF and unplug the pump

6 3 Chemical Cleaning Solution Make-up in Cleaning Chemical Tank TK-9 (continued)

Operator (continued)

[E] Drain the transfer hose into TK-9 and store properly

[F] Empty the rinse water remaining in the 5-gal container into TK-1 through the tank opening

NOTE 7 *The 55-gal drums of hydrogen peroxide are located in the chemical storage container*

[9] **IF** hydrogen peroxide from 55-gal drums is to be used for the cleaning solution, **THEN** transfer 5 to 15 gallons of hydrogen peroxide from the 55-gal drum into the appropriate plastic containers using the hand drum pump

[10] Transfer the hydrogen peroxide from the appropriate plastic containers into TK-9 using the hand pump

[11] Rinse the hand drum pump after use following the instructions provided in steps [6] and [8]

[12] **IF** additional hydrogen peroxide needs to be added prior to the chemical cleaning process, **THEN** repeat Steps [10] and [11] to transfer the desired amount of hydrogen peroxide

[13] **IF** hydrogen peroxide is to be added to the Chemical Cleaning Tank TK-9 from the Bulk Hydrogen Peroxide Tank T-120 in B-891, **THEN** follow these steps

[A] OPEN MV-933 (hydrogen peroxide inlet to TK-9)

[B] OPEN valves
-V-81 (suction to metering pump MP-300-1)
-MV-9030 (discharge from metering pump MP-300-1)

[C] Record level in T-120 by measuring liquid level prior to pumping

[D] Determine proper amount of chemical to transfer (one inch = 9 26 gal)

[E] Turn pump switch for MP-300-1 to ON and monitor

[F] Turn pump switch to OFF when proper amount of chemical has been delivered

[G] CLOSE valves
-V-81
-MV-9030
-MV-933

[14] Record all activities in the CWTF Operations Log Book and CWTF Chemical Logbook

6 4 Filling Ferric Sulfate Tank TK-4

Operator

[1] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

[2] Place a clean plastic bucket on the scale, and measure into the bucket the appropriate amount of ferric sulfate for the intended addition

The mixing ratio of ferric sulfate to water is 1 lb to 1 gallon

[3] **IF** the Mixer MX-4 is NOT running,
THEN start Mixer MX-4 using the ON/OFF switch on the mixer motor

[4] Verify CLOSED the following valves in T900A
- MV-938
- MV-939
- MV-998
- MV-999
- AV-914 (HOA switch should be OFF at the control panel)

[5] Verify CLOSED the following valves in T900B
- MV-959
- MV-961
- MV-963
- MV-985
- MV-962 (water spigot)

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

[6] **IF** the FILTRATE TRANSFER PUMP TP-11-1 is **NOT** running
THEN

[A] OPEN MV-999

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[7] OPEN valves
-MV-938
-MV-959

[8] Fill TK-4 to desired level

[9] CLOSE valves
-MV-959
-MV-938

[10] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

[11] CLOSE MV-999

6 4 Filling Ferric Sulfate Tank TK-4 (continued)

Operator (continued)

[12] Slowly add pre-measured ferric sulfate to TK-4 Examine the texture of the dry ferric sulfate before and during this process Break up any lumps as they will cause splashing during the addition, and may clog the metering pump suction

[13] Allow the mixer for TK-4 to run for at least 10 minutes to ensure proper chemical mixing

[14] Record all activities in the CWTF Operations Log Book and CWTF Chemical Logbook

6 5 Filling Sulfuric Acid Tank TK-5

Operator

[1] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

CAUTION

Liquid level must be above mixer propeller to avoid splashing chemicals Add sufficient amount of water to tank before energizing mixer

[2] Verify CLOSED valves in T900A
- MV-938
- MV-939
- MV-998
- MV-999
- AV-914 (HOA switch should be OFF at the control panel)

[3] Verify CLOSED the following valves in T900B
- MV-959
- MV-961
- MV-963
- MV-985
- MV-962 (water spigot)

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

[4] IF FILTRATE TRANSFER PUMP TP-11-1 is NOT running,
THEN

[A] OPEN MV-999

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[5] OPEN valves
-MV-938
-MV-963

[6] Fill TK-5 to desired level

6 5 Filling Sulfuric Acid Tank TK-5 (continued)

Operator (continued)

[7] CLOSE valves
-MV-963
-MV-938

[8] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

[9] CLOSE MV-999

[10] Place the Mixer MX-5 control switch to ON

[11] **WHEN** adding sulfuric acid to TK-5 from a 55-gal drum,
THEN

[A] Fill a clean 5-gal plastic bucket with approximately 3 gallons of rinse water for the drum pump, from the water spigot MV-962

[B] Use the electric drum pump for the transfer

[C] Ensure that the electric drum pump control switch is in OFF

[D] Attach a 1-inch polyethylene (poly) hose to the discharge line of the drum pump

[E] Place the drum pump suction tube into the sulfuric acid drum

[F] Run the poly hose from the drum pump to the open hatch of the lid and secure

[G] Plug the power cord for the electric drum pump into a 120V receptacle

[H] Place the control switch for the drum pump in ON

[12] **WHEN** the required amount of sulfuric acid has been pumped into TK-5
THEN place the drum pump control switch in OFF

[13] Rinse the drum pump and hose

[A] Place the drum pump into the 5-gal rinse water bucket

[B] Rinse the exterior of drum pump suction tube
[C] Run the poly hose from the drum pump and secure it in the open hatch of the lid of TK-5

[D] Place the drum pump control switch in ON, and pump rinse water from the 5-gal container into TK-5

[E] **WHEN** the 5-gal container is empty
THEN place the drum pump control switch in OFF and unplug the pump

[F] Drain the transfer hose into TK-5 and store properly

6 5 Filling Sulfuric Acid Tank TK-5 (continued)

Operator (continued)

[G] Empty the rinse water remaining in the 5-gal container by pouring it into the open hatch of the lid

[14] Store the electric drum pump in T900B

[15] **WHEN** adding sulfuric acid to TK-5 from the Bulk Sulfuric Acid Tank T-20, **FIRST** follow steps 6 5 [1] through [9] to add water into TK-5, **THEN**

[A] Note the initial tank level of T-20 on the level indicator readout

[B] Ensure valve MV-9007 is CLOSED

[C] OPEN valves
-MV-9004
-MV-9015

CAUTION

Liquid level must be above mixer propeller to avoid splashing chemicals Add sufficient amount of water to tank before energizing mixer

[D] Place mixer MX-5 switch to ON

[E] Determine the proper amount of gallons of sulfuric acid to transfer

[F] Turn metering pump MP-20-1 switch to ON and pump desired amount of sulfuric acid into TK-5

[G] Monitor the local T-20 level indicator to determine when the desired amount of sulfuric acid has been pumped, THEN turn MP-20-1 switch to OFF

[H] CLOSE valves
-MV-9004
-MV-9015

[I] Place mixer MX-5 switch to OFF after sufficient mixing time has elapsed

[16] Record all activities in the CWTF Operations Log Book and the CWTF Chemical Logbook

6 6 Filling Lime Slurry Tank TK-6

Operator

[1] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

CAUTION

Liquid level must be above mixer propeller to avoid splashing chemicals Add sufficient amount of water to tank before energizing mixer

[2] Verify CLOSED the following valves in T900A
- MV-938
- MV-939
- MV-998
- MV-999
- AV-914 (HOA switch should be OFF at the control panel)

[3] Verify CLOSED the following valves in T900B
- MV-959
- MV-961
- MV-963
- MV-985
- MV-962 (water spigot)

NOTE 1 *Placing the control switch for a valve or pump in HAND will illuminate the control switch indicating the valve is open or the pump is running*

[4] **IF** FILTRATE TRANSFER PUMP TP-11-1 is NOT running
THEN

[A] OPEN MV-999

[B] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in HAND

[5] OPEN valves
-MV-938
-MV-961

[6] Fill TK-6 to desired level

[7] CLOSE valves
-MV-961
-MV-938

[8] Place the FILTRATE TRANSFER PUMP TP-11-1 control switch in OFF

[9] CLOSE MV-999

[10] Place the Mixer MX-6 control switch in ON

[11] At control panel in T-900B place the LIME HOPPER BLOWER control switch in ON

6 6 Filling Lime Slurry Tank TK-6 (continued)

Operator (continued)

[12] Scoop the required quantity of lime from a bag into a suitable dry container placed on the scale

[13] Add required amount of lime to the tank (through the lime hopper) to achieve the correct lime solution for the addition process to be used (Wilden M 025 Pump 1 lb lime to 8 gal water, Warren Rupp Pump 1 lb lime to 1 gal of water)

[14] Allow mixer in TK-6 to run for 10 min to ensure proper mix.

[15] Clean the lime hopper by scraping or spraying the lime into TK-6

[16] At control panel in T-900B, place the BLOWER control switch in OFF

[17] **WHEN** blower has been off for at least 60 sec,
THEN operate shaker handle on the side of the bag house for the filter bag six times

[18] Clean up any lime dust that is produced while performing the above steps

[19] Record all activities in the CWTF Operations Log Book and CWTF Chemical Logbook

6 7 Filling Dilute Sulfuric Acid Tank T-21

Operator

[1] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

[2] **IF** mixing a 3% sulfuric acid solution in T-21 using concentrated acid from T-20
THEN perform the following steps

[A] Ensure that there is adequate water in TK-11

[B] Ensure that valve MV-939 is OPEN

[C] OPEN valves
-MV-999
-MV-9008

[D] Record initial level in T-21 and calculate desired amount of water and acid to add, NOTING that 163 gallons is the maximum working capacity for the tank (High level = 35 inches, One inch = 4 65 gallons)

[E] Place switch for FILTRATE TRANSFER PUMP TP-11-1 to ON and monitor T-21 level

[F] When desired level has been reached, turn FILTRATE TRANSFER PUMP TP-11-1 to OFF, and CLOSE valve MV-9008

6 7 Filling Dilute Acid Tank T-21 (continued)

Operator (continued)

[G] Place toggle switch on motor for mixer MX-21 to ON

[H] OPEN valves
-MV-9004
-MV-9007

[I] Ensure MV-9015 is CLOSED

[J] Place switch for metering pump MP-20-1 to ON, and monitor the tank level in T-21

[K] When the proper amount of sulfuric acid has been transferred to T-21 place switch for MP-20-1 to OFF

[L] CLOSE valves
-MV-9004
-MV-9007

[M] If processing will not be immediate allow mixer MX-21 to mix T-21 sufficiently then place switch for MX-21 to OFF

[N] Record all activities in the CWTF Operations Logbook and CWTF Chemical Logbook

[3] If adding sulfuric acid to the Dilute Sulfuric Acid Tank T-21 from 55-gallon drums perform the following steps

[A] Position a drum of concentrated sulfuric acid in the T-21 containment area

[B] Determine the amount of acid to transfer from the drum based on the amount of 3% acid solution needed

[C] Add water per 6 7 [2] [A] through [G] above

[D] Place toggle switch on the motor for mixer MX-21 to OFF

[E] Assemble the drum pump disharge hose at the containment

[F] Don PPE per that CWTF HASP

[G] Note the level in T-21 and determine the proper amount of sulfuric acid to transfer

[H] Disconnect the overflow pipe flange at the top of the tank

[I] Position the drum pump suction tube into the drum bung and the polv discharge hose into the opened overflow

[J] Place the toggle switch for the mixer MX-21 to ON

6 7 Filling Dilute Acid Tank T-21 (continued)

Operator (continued)

[K] One operator will hold the discharge hose in T-21 and another operator will control the drum pump Plug in pump and turn the pump ON

[L] Pump the proper amount into T-21 noting that the working capacity is 163 gallons

[M] When pumping is done, turn pump OFF, drain the discharge hose into tank T-21 and rinse the drum pump as follows

-Fill a five gallon bucket with approximately three gallons of clean water

-Place drum pump into bucket and rinse suction tube exterior

-Place the end of the poly hose into the container and rinse the exterior

-Turn pump switch to ON and recirculate water for approximately two minutes

-Turn the pump switch to OFF, unplug pump and dispose of water in TK-1 in T-900B

[N] Record all activities in the CWTF Log Book and CWTF Chemical Logbook

6 8 Filling Sodium Hydroxide Tank T-22

[1] When transferring sodium hydroxide from T-208 in B-891 to T-22, use the following steps

Operator

[A] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

[B] Note the initial level in tank T-22 by observing the level indicator adjacent to the tank

[C] Ensure that the following valves in B-891 are OPEN

- HVB-208
- V-71
- V-29 (inlet to caustic pump P-5)
- V-27
- V-57
- FV-19 (auto valve operated manually)
- MV-9016 (valve to T-22, above P-1, P-2)

[D] OPEN valve MV-9010 at T-22 and ensure MV-9011 is CLOSED

[E] Energize control power switch on Ion Exchange panel UCP-3 in B-891 MCC

[F] Turn switch for caustic pump P-5 on the Ion Exchange panel UCP-3 to HAND

6 8 Filling Sodium Hydroxide Tank T-22 (continued)

Operator (continued)

[G] The operator who energizes the pump will remain in radio contact with an operator stationed at tank T-22 who will observe the level indicator The working capacity of tank T-22 is 35' = 163 gallons

[H] When tank T-22 has reached working capacity the operator local to tank T-22 will instruct the operator at the P-5 pump control to turn the switch to OFF

[I] CLOSE valves
-FV-19
-MV-9016

[J] CLOSE MV-9010 at tank T-22

[K] Record all activities in the CWTF Operations Log Book and CWTF Chemical Logbook

[2] When filling the Sodium Hydroxide Tank T-22 from 55-gallon drums use the following steps

Operator

[A] Don the required Personal Protective Equipment (PPE) in accordance with the HASP

[B] Note the initial level in tank T-22 by observing the level indicator adjacent to the tank

[C] Ensure that the electric drum pump switch is OFF and one inch poly hose are assembled

[D] Disconnect the overflow pipe flange on top of the tank

[E] Position the drum pump suction tube into the drum bung and the poly discharge hose into the opened overflow

[F] One operator will hold the discharge hose in the tank and another operator will control the drum pump Plug in pump and turn the pump ON

[G] Pump the contents of the drum into T-22 noting that the working capacity is 163 gallons

[H] When pumping is done drain the discharge hose into tank T-22 and rinse the drum pump as follows

- Fill a five gallon bucket with approximately three gallons of clean water
- Place drum pump into bucket and rinse suction tube exterior
- Place the end of the poly hose into the container and rinse the exterior
- Plug in the drum pump turn switch to ON and recirculate water for approximately two minutes
- Turn the pump switch to OFF unplug the pump and dispose of water in TK-2 in T-900B

6 8 **Filling Sodium Hydroxide Tank T-22 (continued)**

Operator (continued)

[I] Record all activities in the CWTF Log Book and CWTF Chemical Logbook

7 POST-PERFORMANCE ACTIVITY

Management of all records is consistent with 1-77000-RM-001, Records Management Guidance for Records Sources

The records generated as a result of these procedures are considered quality records and are managed in accordance with 2-G18-ER-ADM-17 01, Records Capture and Transmittal The records generated as a result of these procedures are also considered to be part of Project Files and are managed in accordance with 2-G18-ER-ADM-17 01

Project Manager

[1] Ensure that the original and one copy of the following quality-related records, as appropriate are transmitted to the RMRS ERPD Records Center in accordance with 2-G18-ER-ADM-17 01

- CWTF Operations Log Book
- CWTF Chemical Logbook
- Qualification/Training Documentation, as required
- Occurrence Reports, as required

Submission of record copies to the RMRS ERPD Records Center will satisfy Administrative Record requirements

8 REFERENCES

Rocky Flats Plant Consolidated Water Treatment Facility Health and Safety Plan

1-10000-HWR, Hazardous Waste Requirements Manual

1-77000-RM-001, Records Management Guidance for Records Sources

2-F94-ER-ADM-02 01, Training

2-G18-ER-ADM-17 01, Records Capture and Transmittal

4-I60-ENV-OPS-FO 42, Chemical Cleaning Operations, Consolidated Water Treatment Facility